102(b), the Office must demonstrate that each and every claim limitation is identically described or contained in a single prior art reference. (See *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991)). As explained herein, it is respectfully submitted that the Office Action does not meet this standard, for example, as to all of the features of the claims. Still further, not only must each of the claim limitations be identically described, an anticipatory reference must also enable a person having ordinary skill in the art to practice the claimed invention, namely the claimed subject matter of the claims, as discussed herein. (See *Akzo, N.V. v. U.S.I.T.C.*, 1 U.S.P.Q.2d 1241, 1245 (Fed. Cir. 1986)). In particular, it is respectfully submitted that, at least for the reasons discussed herein, the reference relied upon would not enable a person having ordinary skill in the art to practice the subject matter of the claims as presented.

As further regards the anticipation rejections, to the extent that the Office Action may be relying on the inherency doctrine, it is respectfully submitted that to rely on inherency, the Examiner must provide a "basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics *necessarily* flows from the teachings of the applied art." (See M.P.E.P. § 2112; emphasis in original; and see *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int'f. 1990)). Thus, the M.P.E.P. and the case law make clear that simply because a certain result or characteristic may occur in the prior art does not establish the inherency of that result or characteristic. Accordingly, it is respectfully submitted that any anticipation rejection premised on the inherency doctrine must fail absent the foregoing conditions.

Claim 1 is directed to a method that includes: "obtaining"; "mapping"; "mapping"; "cutting"; generating a provisional sprite where foreground objects are deleted; cutting out a first image from the provisional sprite by using the global motion; obtaining a difference image between the first image and the original image; extracting a foreground object image as a region in the difference image where each difference value in the region is equal to or higher than a threshold, and extracting other region as a background image; mapping the background image to the reference coordinate system by using the global motion for the each of frames by inserting a new pixel in a point where a pixel value is not yet decided, or by overwriting a pixel, for generating and outputting the background sprite.

In particular, in claim 1, a provisional sprite (or temporary background sprite) is generated, and the background image and the foreground image are then separated by using the provisional sprite, so that a background sprite is generated by using background images.

Accordingly, using the claimed subject matter, a clear background sprite having the benefit of no blur can be obtained. Thus, according to the method of claim 1, a provisional sprite is generated, and then a sprite is generated again by using the provisional sprite, so that a clear sprite is generated.

In contrast, as explained in the text at page 2, lines 15-22, and at page 3, lines 14-18, of the specification, a background sprite generated by a "conventional" method may be unclear.

It is respectfully submitted that the Crinon reference does not identically describe (or even suggest) the sprite generation method of claim 1 using a provisional sprite. In the text at col. 2, lines 37-55, Crinon apparently indicates that, in the encoder: foreground and background objects are segmented by first encoding and decoding a first image at a first time reference; the macroblocks are matched to image sample arrays; in the first case, the encoder uses local motion vectors to align an individual macroblock with one or several corresponding image sample array; in the second case, the encoder uses parameters of a global motion model to align an individual macroblock with a corresponding mosaic sample array; the encoder evaluates the various residuals and selects the proper prediction signal; this decision is captured in the macroblock type; and the macroblock types, the global motion parameters, the local motion vectors and the residual signals are transmitted to the decoder. In the text at col. 3, lines 23-35, Crinon apparently indicates that: automatic segmentation does not require any additional frame storage and works in a coding and in a non-coding environments; an automatic segmentation-based mosaic image reconstruction encoder; automatic object segmentation builds a mosaic for an object exhibiting the most dominant motion in the video sequence by isolating the object from the others in the video sequence and reconstructing a sprite for that object-only; and the sprite becomes more useable since it is related to only one object.

Thus, in Crinon, the text at col. 2, lines 37-55, or col. 3, lines 23-35, simply does not identically describe (or even suggest) the above-discussed features of claim 1.

As to claim 2, in Crinon, its Fig. 8 purports to indicate how the encoder 25 (FIG. 5A) distinguishes background from foreground in the INTER1V macroblocks. The macroblock 15 in VOP 14 is determined by the encoder 25 to be of type INTER1V. The global motion parameters for VOP 14 are applied to macroblock 15 in box 58. The INTER1V local motion vector is applied to macroblock 15 in block 56. A pixel array 55 corresponding to the global motion vector is compared to the macroblock 15 to generate the global motion estimation

residual GMER(j,k) in block 62. The pixel array 18 corresponding to the INTER1V local motion vector is compared to the macroblock 15 generating the INTER1V residual RES(j,k) in block 64. The global motion estimation residual GMER(j,k) and the INTER1V residual RES(J,k) are compared in block 66. If the global residual GMER(j,k) is greater than some portion of the INTER1V residual RES(j,k), then the image in the macroblock 15 has its own motion and does not correspond to the global motion induced by panning, zooming, etc. of the camera. Accordingly, the image in macroblock 15 is tagged as foreground in block 68. Conversely, when the INTER1V residual RES(j,k) is greater than the global residual GMER(j,k), the image in the macroblock 15 tagged as background because it is likely to be new content in the background or a better representation of the background than what is currently in the mosaic 22. The macroblocks 15 tagged as background are inserted into the mosaic 22. (See Crinon, Figures 5A and 8, and related text).

This procedure simply does not identically describe (or even relate to) the features of claim 2 which involve cutting out a second image from the background sprite by using the global motion, obtaining a difference image between the second image and the original image, and extracting a foreground object image as a region in the difference image where each difference value in the region is equal to or higher than a threshold.

It is therefore respectfully submitted that claim 2 is allowable for these further reasons.

Independent claims 3 and 5 include features like those of claim 1 and are therefore allowable for essentially the same reasons.

As further regards claims 4 and 6, which respectively depend from claims 3 and 5, claims 4 and 6 include features like those of claim 2 and are also allowable for essentially the same further reason as claim 2.

In claim 7, a first value is provided to all shape pixels in each of first macro-blocks when the number of pixels of the foreground part in the first macro-block is equal to or larger than a first predetermined value n ($n \geq 1$); and the first value is provided to all shape pixels in each of second macro-blocks when the number of pixels of the foreground part in the second macro-block is equal to or larger than a second predetermined value m ($m<n$), wherein the second macro-block is close to the first macro-block where the first value is provided. That is, claim 7 provides a first macro-block approximation and a second macro-block approximation, as described at pages 24-26 of the specification (see Fig. 11C). By performing the two stage macro-block approximation for extracting a segmentation mask, there remains

no hole in an extracted object, so that a good-looking object may be provided.

In contrast, Crinon does not identically describe (or even suggest) the first and second macro-block approximation features of the claims. In Crinon, Fig. 9 and the text at col. 9, lines 42-67, and col. 10, lines 1-30, refer to a "process segmentation map" to "make regions more homogeneous" and to "updat[ing the] mosaic according to [a] new segmentation map", and therefore simply does not identically describe (or even suggest) the first and second macro-block approximation.

The Crinon reference refers to a binary segmentation map and to using a neighborhood of macro-blocks around a macro-block of interest in the text at col. 9, lines 20-28, but this reference does not identically describe (or even suggest) the features of claim 7 (or claim 8, as explained above).

It is therefore respectfully submitted that claims 7 and 8 are allowable.

Claim 9 is directed to a method that includes the following: providing a predetermined value to each of positions in the foreground map corresponding to first macro blocks when a value of the number map corresponding to the first macro-block is equal to or larger than a first predetermined value n ($n \geq 1$); providing the predetermined value to each of positions in the foreground map corresponding to second macro-blocks when a value of the number map-corresponding to the second macro-block is equal to or larger than a second predetermined value m ($m<n$), wherein the second macro-block is close to the first macroblock where the predetermined value is provided; and generating the segmentation mask from the foreground map and outputting the segmentation mask.

Claim 9 includes the first and second macro-block approximation features like those of claim 7. The foreground map is also used in claim 9, as described at pages 30-32 of the specification.

The Crinon reference refers to generating macro-blocks having multiple local motion type vectors and to having macroblocks as foreground only, background only, and foreground or background (col. 2, lines 37-67). Since claim 9 includes features like those of claim 7, the Crinon reference does not identically describe claim 9 (or dependent claim 10) for essentially the same reasons as claim 7, so that claims 9 and 10 are allowable.

Independent claim 11, 13 and 15 also include features like those of claims 7 and 9, and are therefore allowable for essentially the same reasons, as are respective dependent claims 12 and 14.

As regards paragraph six (6), claims 16, 18, 20 and 22 to 30 were rejected under 35

U.S.C. § 103(a) as unpatentable over Wang, U.S. Patent No. 6,125,409.

Claim 16 is directed to a segmentation mask extraction method and includes the following: "obtaining"; initializing an energy map for the macro-block of the difference image; calculating energy values for the each macro-block; obtaining an average of the energy values; calculating a foreground ratio which is a ratio of the size of a foreground mask to the size of the image; and generating the segmentation mask by using the foreground ratio.

As described as to the fourth embodiment of the specification, when the foreground ratio is too large, the amount of shape coding bits increases. With the claimed subject matter, however, since the foreground ratio can be restricted, the amount of coding bits can be decreased for MPEG-4 coding.

In contrast, Wang does not describe any "generating" of a "segmentation mask by using foreground ratio". Although the Office Action asserts that Wang discloses an energy map, feature vector or image descriptor to describe multi-band images or the correlation between a first image and a second image (col. 5, lines 12-59), this simply does not describe or relate to "generating" a "segmentation mask by using foreground ratio", as understood in the context of the specification and the claims.

Therefore, claim 16 is allowable, as are independent claims 18 and 20, which recite like features. Also, claims 17, 19 and 21 are allowable since they respectively depend from allowable claims 16, 18 and 20.

As to claim 22, it also includes first and second macro-block approximation features like those of claim 7, as described in the text at page 26, lines 24-26, as to the fourth embodiment of the specification. The Office Action asserts that Wang discloses an energy map, feature vector or image descriptor to describe multi-band images or the correlation between a first image and a second image, but Wang simply does not describe the first and second macro-block approximation features as recited in the context of claim 22 (or claim 7), so that claim 22 is allowable for essentially the same reasons as claim 7.

Claim 24 also includes first and second macro-block approximation features for extracting a segmentation mask, like those of claims 7 and 22. In addition, claim 24 includes the feature of "dividing energy value by average", "iterating", and the like. The Office Action unsupportedly asserts that Wang discloses comparing the image descriptors and categorizing the different image descriptors belonging to a different image category type (col. 17, lines 32-67), but it simply does not even suggest the first and second macro-block approximation features for extracting a segmentation mask, as explained above.

Claims 25, 26 and 27, and claims 28, 29 and 30, include features like those of analogous claims 22, 23 and 24, and are therefore allowable for essentially the same reasons.

As further regards all of the above obviousness rejections, to reject a claim as obvious under 35 U.S.C. § 103, the prior art must disclose or suggest each claim element and there must be a motivation or suggestion for combining the elements in the manner contemplated by the claim. (See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 (1990); In re Bond, 910 F.2d 831, 834 (Fed. Cir. 1990)). Thus, the "problem confronted by the inventor must be considered in determining whether it would have been obvious to combine the references in order to solve the problem", Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 679 (Fed. Cir. 1998). The references relied upon simply do not address the problems (referred to in the present application) that are met by the subject matter of any of the rejected claims, including the problem of providing a clear background sprite, as explained above.

The cases of In re Fine, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988), and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), also make plain that the Office Action's assertions that it would have been obvious to modify the reference relied upon does not properly support a § 103 rejection. It is respectfully suggested that those cases make plain that the Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

> Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . **One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1600 (citations omitted; emphasis added). Likewise, the Court in the case of In re Jones stated that:

> Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .
>
> **Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to**

> **make the modifications . . . necessary to arrive at the claimed [invention].**

In re Jones, 21 U.S.P.Q.2d at 1943 & 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the Office Action reflects hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding.

More recently, the Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a "technologically simple concept" -- which is not even the case here, there still must be some finding as to the "specific understanding or principle within the knowledge of a skilled artisan" that would motivate a person having no knowledge of the claimed subject matter to "make the combination in the manner claimed", stating that:

> In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. *With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the manner claimed.* In light of our holding of the absence of a motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper *prima facie* case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a) over Evans.

(See In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Federal Circuit 2000) (italics added)). Here again, there have been no such findings to establish that the features discussed above of the rejected claims are met by the reference relied upon. As referred to above, any review of the reference relied upon makes plain that it simply does not describe the features discussed above of the rejected claims.

Still further, it is again respectfully submitted that not even a *prima facie* case has been made in the present case for obviousness, since the Office Action never made any findings, such as, for example, regarding in any way whatsoever what a person having ordinary skill in the art would have been at the time the claimed subject matter of the present application was made. (See In re Rouffet, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998) (the "factual predicates underlying" a *prima facie* "obviousness determination include the scope

and content of the prior art, the differences between the prior art and the claimed invention, and the level of ordinary skill in the art")). It is respectfully submitted that the proper test for showing obviousness is what the "combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art", and that the Patent Office must provide particular findings in this regard -- the evidence for which does not include "broad conclusory statements standing alone". (See In re Kotzab, 55 U.S.P.Q. 2d 1313, 1317 (Fed. Cir. 2000) (citing In re Dembiczak, 50 U.S.P.Q.2d 1614, 1618 (Fed. Cir. 1999) (obviousness rejections reversed where no findings were made "concerning the identification of the relevant art", the "level of ordinary skill in the art" or "the nature of the problem to be solved"))). It is again respectfully submitted that there has been no such showings by the Office Action.

In summary, it is respectfully submitted that all of claims 1 to 30 of the present application are allowable at least for the foregoing reasons.

CONCLUSION

In view of all of the above, it is believed that the rejections of claims 1 to 30 have been obviated, and that these currently pending claims are allowable. It is therefore respectfully requested that the rejections be reconsidered and withdrawn, and that the present application issue as early as possible.

Respectfully Submitted,
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Dated: 3/4/2003

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